

3/3 019 UNCLASSIFIED PROCESSING DATE--23OCT70
CIRC ACCESSION NO--AP0121084
ABSTRACT/EXTRACT--SUCH COPIES PRESERVE THE "ELECTRICAL MEMORY" EVEN AFTER .
THEY ARE DETACHED FROM THE SURFACES OF CRYSTALS AND CAN HENCE BE USED AS
ACTIVE SUBSTRATES FOR VARIOUS HETEROGENEOUS PROCESSES, IN PARTICULAR,
FOR EPITAXY. FACILITY: ' INSTITUTE OF CRYSTALLOGRAPHY, ACADEMY OF
SCIENCES OF THE U.S.S.R., MOSCOW.

UNCLASSIFIED

USSR

DITMAN, A. O., GRAZHDANOV, I. M., FILATOV, S. M., MAKSIMOV, N. A., DIANOV, G. P., and DMITRIYEVSKIY, I. V.

"Device for Simulating the Aerodynamic Characteristics of Aircraft"

USSR Authors' Certificate No 378885, Cl. G 06g 7/44, filed 15 Jun 71, published 18 Apr 73 (from Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 19, 1973, p 132)

Abstract: The device contains a magnetic cabin, a full-scale research model, a system of conductors to simulate a stationary vortex sheet, a power supply unit, commutators, a zero indicator, and groups of sensors. The distinctive feature is that, to expand the class of problems that can be solved, it contains a system of U-shaped conductors mounted in the magnetic cabin in the plane of the system of stationary vortex sheet-simulating conductors, a circulation monitor connected to the system of vortex sheet-simulating conductors, coders, and a computing unit connected to the data unit. The full-scale research model is mounted in the magnetic cabin and is connected to the

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USSR

DITMAN, A. O., et al., USSR Authors' Certificate No 378885

system of stationary vortex sheet-simulating conductors. The first group of sensors mounted on the exit edge of the full-scale model is connected through the first commutator to the zero indicator; the second group, through the second commutator to the input of the first coder, whose output is connected to the first input of the computing unit, the second input of which has connected to it the output of the second coder, which is connected through the third commutator to the output of the circulation monitor.

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USSR

UDC 681.333

DITMAN, A. O., and DIANOV, G. P.

"A Device for Simulating Flow Around Flat Blade Assemblies With an Infinite Number of Foils"

Moscow, Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, No 22, Aug 71, Author's Certificate No 309377, Division G, filed 21 Oct 69, published 9 Jul 71, p 193

Translation: This Author's Certificate introduces a device for simulating flow around flat blade assemblies with an infinite number of foils. The device contains a model of the field to be studied made from an electrically conductive material into which the streamline foil is cut. The device also includes toroidal transformers and resistors. As a distinguishing feature of the patent, the research time is cut down and the device is simplified by connecting the edges of the model of the periodic region of the field of flow being studied by appropriate wiring in an electrically closed circuit which passes through the toroidal transformer, while the region which simulates the streamline foil is cut in the form of two parts along the edges of the periodic region of the flow field being studied. Appropriate points of
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USSR

DITMAN, A. O., and DIANOV, G. P., Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, No 22, Aug 71, Author's Certificate No 309377, Division G, filed 21 Oct 69, published 9 Jul 71, p 193

the cross section of the foil are interconnected by wiring into the electric circuit which passes through the toroidal transformer, creating a longitudinal circulating electric field in the conducting medium.

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DITMANN, K.

JPRS 57631

23 November 1972

ABSTRACTS OF REPORTS PRESENTED AT THE FIRST ALL-UNION
CONFERENCE ON METAL-DIELECTRIC PHASE TRANSITIONS

Excerpts from Russian language book: Shornik Knazhik Soderzhaniv
Doklady, Predstavlenykh Na I Vsesoyuznyy Konfertsiiyu po Priro-
doznaniyu Metal-Dielektrik, 1972, Akademiya Nauk SSSR, Min-
istry of Higher and Secondary Specialty Education USSR, Min-
Moskovskogo Universiteta, Moscow, pp 8-10, 10-12, 15-17, 18-25.

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DITMANN, Kh.

JPRS 5763/
30 Nov. 1972

METAL-DIELECTRIC PHASE TRANSITIONS OF BISM ALLOYS IN STRONG MAGNETIC FIELDS

[Article by N. B. Brandt, Ye. A. Svistova, Moscow State University, Physics Department, pp 8-10]

Presented in this paper are the results of a study of the magnetic resistance of specimens with small controlled overlapping of zones and controlled energy slit, i.e., of metallic and semiconductor alloys of bismuth and antimony in which the antimony concentrations vary up to 2%, in pulsed magnetic fields up to 700 kOe in the 2-77°K temperature range, the purpose of which was to discover effects related to qualitative changes in the energy spectrum of the specimens in the ultranquantum region of magnetic fields.

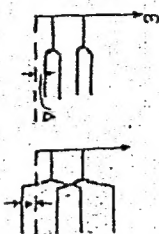


Figure 1.

Quantization of carrier energy and the spin discretization of the energy levels in the magnetic field lead to displacement of the boundaries of the energy zones (Figure 1).

In the ultranquantum region the displacement of zone boundaries (Δ) reaches a magnitude comparable to or greater than the Fermi energy in the zones of the metals or the energy slit in semiconductors. Here electron transitions may occur, depending on the ratio of the spin and orbital masses of the carriers.

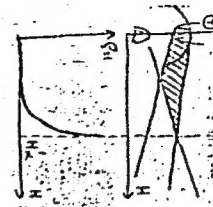


Figure 5.

concentration of current carriers increase. When $H > H_k$, the character of displacement of zone boundaries changes qualitatively: the extremum T continues to descend, but then the extremum L_s begins to rise. Consequently overlapping of zones L_s and T vanishes when $H = H_k$ and an energy slit is formed when $H > H_k$, whereupon the metal becomes a semiconductor.

The exponential increase of magnetic resistance for $H > H_k$, appearance of semiconductor dependence of electrical resistance on temperature when $H > H_k$, dependence of field H_k on the composition of the alloy (magnitude of zone overlapping when $H = 0$) indicate that zone overlapping in the energy spectrum vanishes in field H_k and an energy slit appears when $H > H_k$. Then metallic BiSb alloys go into the semiconductor state.

Also observed in the work is the transition of a semiconductor into the slitless state. This type of transition is a consequence of convergence and subsequent divergence of the L_s and L_g extrema, located at the same point of the phase space. If the substance is a semiconductor when $H = 0$, then because of convergence of the extrema the semiconductor goes into a unique slitless state, characterized by an anomalously small energy slit between the zones and by increased conductivity.

More complex transitions, related to the motion of several different extrema, were also observed in the work.

I. M. LIFSHTIS, METAL-DIELECTRIC PHASE TRANSITIONS IN $Bi_{1-x}Sb_x$ ALLOYS UNDER THE INFLUENCE OF PRESSURE

(Article by N. B. Brandt, M. D. Dymov, M. Kossel, Ya. G. Jonagayev, S. M. Chudinov, V. A. Yastrebina, Moscow State University, Physics Department, pp 10-17)

1. The second and fifth order phase transitions predicted by I. M. Lifshits, which occur in $Bi_{1-x}Sb_x$ alloys under the influence of pressure, are analyzed. The Shubnik oscillations of longitudinal and transverse magnetic resistances in fields $0 < H < 70$ kG and the galvanomagnetic tensor component (for the case $\omega \ll 1$) in the $1 \text{ bar} < p < 20 \text{ kbar}$ pressure range at helium temperatures were measured in monocrystalline specimens of $Bi_{1-x}Sb_x$ alloys.

Molecular Biology

USSR

UDC 576.851.47.095.38:576.858.9

PANTSKHAVA, N. N., DITYATKIN, S. Ya., and IL'YASHENKO, B. N., Institute of Epidemiology and Microbiology imeni Gamaleya, Academy of Medical Sciences USSR, Moscow

"Reproduction of Infectious DNA from E. coli Phage in Proteus Cells"

Moscow, Zhurnal Mikrobiologii, Epidemiologii i Immunobiologii, No 4, 1973, pp 35-40

Abstract: Studies were conducted to determine the optimum conditions for the infection of 2 strains of *Proteus vulgaris* (401 and 3137) with the circular DNA (1.7×10^6 MW) isolated from E. coli phage λ 7. DNA was isolated from ca. 10^{13} viral particles per 1 ml, and diluted with 0.05 M tris buffer, pH 7.8. The DNA preparation was mixed with a proteus culture, grown in peptone broth (Spofa, Czechoslovakia), and 0.2 ml samples were immediately frozen in a mixture of dry ice and alcohol at -70° , and then thawed in a water bath at 37° . After an additional 10 min incubation period, the bacteria were diluted with 1% peptone and the viral titer was determined by plaque assay on E. coli C. Optimal conditions consisted of a cell concentration of $1-2 \times 10^{10}$ /ml, and $0.062-1 \mu\text{g/ml}$ of DNA, pH 6.0-8.0, and Spofa peptone. Under these conditions

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USSR

PANTSKHAVA, N. N., et al., Zhurnal Mikrobiologii, Epidemiologii i Immunobiologii, No 4, 1973, pp 35-40

$1-4 \times 10^5$ infectious centers were formed per $1 \mu\text{g}$ of phage $\phi\phi 7$ DNA. The fraction of proteus cells that were transfected constituted $1/10^5$ th of the total number of proteus cells. The low efficiency of infectivity was apparently due to the low number of proteus cells able to take up the DNA. The freezing and thawing method has been found to be the only one allowing proteus transfection with E. coli phage $\phi\phi 7$ DNA. All previous studies had consisted of attempts at infecting proteus spheroplasts with phage $\phi\phi 7$ DNA. Proteus cells in the lag, logarithmic, and stationary phases of growth were equally well infected.

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USSR

UDC 621.382:621.362

BYALED'DINOV, M.F., KHORUNZHIN, YU. P., DITYAT'YEV, M.B.

"Semiconductor Thermoelectric Conditioners And Coolers"

Kholodil'n. tekhn. i tekhnol. Resp. mezhved. nauchno-tekhn. sb. (Refrigeration Technology And Production Processes. Republic Interdepartmental Scientific-Technical Collection), 1970, No 9, pp 6-8 (from RZh--Elektronika i yeye primeneniye, No 11, November 1970, Abstract 11B173)

Translation: A description is given of conditioners and coolers, the operation of which is based on the use of the Peltier thermoelectric effect. A number of new developments are described which were produced during the last 2-3 years at SKBPP [expansion uncertain. SKB probably = Spetsial'noye konstruktorskoye byuro, i.e., Special Design Office. PP may = Pishchevaya promyshlennost', i.e., Food Industry]. An analysis is conducted of the practical operation of conditioners placed into use in 1963-1964. The problem is discussed of determining the quantitative indices of the reliability, both of conditioners on the whole, and of thermopiles. Liquid coolants are discussed, with water heat removal from hot junctions, and their technical characteristics are listed. Summary.

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USSR

UDC 517.925.66

DIVAKOVA, A. YA., Odessa State University imeni I. I. Michnikov

"On Nonoscillating Solutions of Linear Third-Order Differential Equations"

Minsk, Differentsial'nyye Uravneniya, Vol. 6, No. 8, Aug 70, pp 1506-1509

Abstract: Theorems concerning the oscillation of solutions of a third-order differential equation

$$d^3w/dz^3 + f(z)w = 0$$

in the complex plane are presented. The Hill method and an integral Green's transformation are applied. Sufficiency conditions are given for the existence of nonoscillating solutions in the complex region, and their asymptotic properties are studied. A method is given for determining nonoscillating solutions with the aid of continued fractions for real values of $z = x > 0$.

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USSR

UDC 621.385.31

BLIVAKOVA, YE. K.

"Properties Of Rectification In Microwave Triodes"

Elektron. tekhnika. Nauchno-tekhn. sb. Elektron. SVCh (Electronic Technology. Scientific-Technical Collection. Microwave Electronics), 1970, No 8, pp 63-70 (from RZh--Elektronika i yeye primeneniye, No 12, December 1970, Abstract No 12A150)

Translation: A computation is presented of the rectifier current of microwave triodes, taking into account the initial velocities of the electrons and the island effect. It is shown that in certain regimes the rectifier current can be negative. The experimental results are presented of an investigation of rectification in a microwave triode. The power-transmission coefficient is obtained for more units in the range of input powers from microwatts to 100 megawatts. 1 ref. Summary.

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USSR

UDC 621.385.3.31

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DIVAKOVA, Ye. K.

"Computation For Anode Current Of Microwave Triode, Taking Into Account The Initial Velocities Of The Electrons And The Island Effect"

Elektron. tekhnika. Nauchno-tekhn. sb. Elektron. SVCh (Electronics Technology. Scientific-Technical Collection. Microwave Electronics), 1970, No 6, pp 78-85 (from RZh--Elektronika i yeye primeneniye, No 10, October 1970, Abstract No 10A135)

Translation: Expressions are obtained for the anode current in a plane-parallel triode with the initial velocities of the electrons and the island effect taken into account. A computation is performed for the anode and anode-grid characteristics of a microwave triode with small interelectrode spaces. The role is evaluated of various factors (initial velocities and island effect) which influence the characteristics of the triode. Summary.

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USSR

UDC: 547.963.3

IBRAGIMOV, A. P. and DIVAVIN, I. A., Institute of Biochemistry of the Uzbek SSR Academy of Sciences

"Pyrimidine Oligonucleotides of DNA of Cotton Sprouts in Normal State and When Grown From Irradiated Seeds"

Tashkent, Khimiya Prirodnikh Soyedineniy, No 3, 1970, pp 384-386

Abstract: DNA was isolated from seven-day cotton sprouts, using cotton varieties 108-F and its radio-mutant prepared by gamma-irradiation with Co^{60} (budding phase) at a dose of 2 kilorads. Base compositions of radio-mutant and irradiated samples compared with control were as follows (guanine-cytosine pairs, mole %): variety 108-F -- 45.9, radio-mutant -- 46.9, after irradiation with 25 kilorads -- 48.8. Separation of nucleotides by polymericity showed that neither the radio-mutant nor the irradiated samples substantially differed from control. Thyminecytosine ratio varied from 1.54 in control to 1.50 in radio-mutant and 1.42 after 25 kilorad irradiation of seeds. Thus, variations in composition and sequence of pyrimidines occurs mainly due to reduction in thymine content, evidently linked with its radiation-chemical breakdown.

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USSR

UDC 519.217

DIVEYEV, R. Kh.

~~Two Criteria for Optimality of Control~~

Tr. N-i. i Projektn. In-ta. po Vnedreniyu Vychisl. Tekhn. v Nar. Kh-vo [Works of Scientific Research and Planning Institute for Introduction of Computer Technology to the National Economy] No 3, 1970, pp 102-106 (Translated from Referativnyy Zhurnal Kibernetika, No 3, 1971, Abstract No 3 V64).

No Abstract

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USSR

UDC 519.24

DIVEYEV, R. Kh.

"Sufficient Divisions"

Uch. Zap. Kazan. Un-t. [Scientific Writings of Kazan' University], Vol. 130, No. 3, 1970, pp 51-53 (Translated from Referativnyy Zhurnal Kibernetika, No. 4, April, 1971, Abstract No. 4 V117 by A. Kagan).

Translation: Suppose in the space (X, S) a set of probability measures P_θ is defined, depending on parameter $\theta \in \Omega$ and absolutely continuous with respect to a certain measure μ , $dP_\theta/d\mu = p(x; \theta)$. The minimum sufficient division is defined as follows: "Let us study in X the relationship R :

$$R(x, x') = \frac{p(x, \theta)}{p(x', \theta)} \quad \text{Independent of } \theta \text{ p. v.} \quad (1)$$

We will state that set $\{P_\theta\}$ permits the minimum sufficient division (MSD), if R is the relationship of equivalence. Equivalence of division X defined by this relationship is the MSD $_\zeta$. Any subdivision of the MSD is a sufficient division. In theorem 1, measurability of division ζ (taken as measurability of each element of this division) can be proven with one of the following conditions: 1) Ω is denumerable, 2) $P(x; \theta) = \sum_i c_i(\theta) \times p(x, \theta_i)$, $\theta_i \in \Omega$.

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USSR

UDC 519.24

DIVEYEV, R. Kh., Uch. Zap. Kazan. Un-t., Vol. 130, No. 3, 1970, pp 51-53.

Theorem 2. In order for division ζ to be a sufficient division, it is necessary that there exist a division

$$p(x, \theta) = g(x, \theta) b(x),$$

such that ζ with every θ is a subdivision of division ζ_g , generated by function $g(x, \theta)$. If $p(x, \theta) > 0$, this condition is also sufficient.

Theorem 3 formulates the criterion of $sd\zeta$ in terms of conditional probabilities relative to the σ algebra generated by division ζ .

Abstractor's note. 1) The abstractor does not understand the meaning of p_v in definition (1). 2) The definition of the msd is related to whether R is the relationship of equivalence or not. At the same time, for a set of divisions absolutely continuous according to a certain measure, there is always a minimum sufficient statistics, the division generated by which must naturally be considered an msd . 3) The generally accepted definition of measurability of a division in the theory of measures differs significantly from that used in this work; the latter seems to me to be unsuitable for any purpose. 4) Proof of necessity based on Theorem 2, is found on the assumption of the existence of $msd\zeta$.

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USSR

UDC: 533.6.011

DIVID, Yu. N.

"A Problem in Determining the Form of an Optimal Body of Least Resistance"

Tr. Mosk. aviats. in-ta (Transactions of the Moscow Aviation Institute) 1970, No. 205, pp 13-16 (from RZh-Mekhanika, No. 2, Feb 71, Abstract No. 2B322)

Translation: The transverse cross-section contour of the body consists of two circular arcs with the specified angles ϕ_1 and ϕ_2 , and a third arc smoothly integrated with them. The two parameters determining the transverse cross-section contour are found from the solution of the problem regarding the form of the body with minimum wave resistance for a given length, volume, and lifting force. The pressure on the surface of the body is computed from Newton's law, and the problem is solved with an electronic computer on the basis of the Pontryagin maximum principle. G. I. Maykapar

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USSR

UDC 621.378.9:621.395.623

VAKULENKO, A. M., DIVIL'KOVSKIY, I. M., KOVALEVSKIY, D. V., SMIRNOV, N. V.

"The TO-2 Optical Telephone"

Moscow, Kvantovaya Elektronika, Sbornik Statey, No 4, "Sovetskoye Radio", 1971, pp 134-136

Abstract: The paper describes the TO-2 telephone system based on a gallium arsenide semiconductor laser of the injection type. The system has a line-of-sight range of about 5 km, which can be increased by separating the transmitting and receiving channels, thus eliminating the beam splitter used in the common-channel transceiver, which introduces a power loss of about 75 percent. The system is designed for simultaneous two-way communication. A working model of the TO-2 system was put on display in the "Physics" pavillion of the Exhibition of Achievements of the National Economy in 1970. The transmitting laser has a threshold current of 30-50 μ amps, and emits on a wavelength of the order of 0.9 micron. Power consumption is no more than 3.5 W at a supply voltage of 9 V. Two figures, bibliography of three titles.

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DIVINA, L. Ya.

CARDIAC ELECTRIC ACTIVITY ACCOMPANYING DIFFERENT DEGREES OF DECOMPRESSION OF THE LOWER HALF OF THE BODY

UDC 616-001.12-031.22-97:616.12-073.97

JPRS 56030

18 MAR 72

[Article by L. G. Volodina and L. Ya. Divina; Moscow, *Russkaya Biologiya i Meditsina*, Russian, Vol 6, No 2, March-April 1972, pp 33-43, submitted for publication 18 January 1971]

Abstract: A study was made of cardiac electric activity during applications of negative pressure of -40 and -80 mm Hg to the lower half of the body. The examinations revealed a significant increase in the heart rate, an increase in the R amplitude, and a decrease in the T amplitude, as well as displacement of the heart electric axis toward the vertical, related to the degree of decompression. During the first minutes of exposure changes in the R and T voltage and the electric position of the heart developed simultaneously but later occurred independently: the R variations were most distinct, T changes were least pronounced. These changes seemed to be associated not only with an impeded venous return to the heart and its reduced blood filling, but also with a redistribution of the specific weight of components of innervation, the sympathetic innervation being predominant. The collected data suggest that lower body negative pressure is an adequate model simulating the effect of longitudinal cardiac electric activity.

Decompression of the lower half of the body, causing changes in functioning of many body systems and especially the cardiovascular system, are regarded as a method for "straining" of the latter (Brown, et al.; Murray, et al., and others), stimulating the hemodynamic effects of longitudinal accelerations and an orthostatic test. Decompression can considerably decrease blood return to the heart and thereby changes intracardiac hemodynamics (Butler, et al.).

Acc. Nr:

AP0038027

Ref. Code: UR 0056

PRIMARY SOURCE: Zhurnal Eksperimental'noy i Teoreticheskoy
Fiziki, 1970, Vol 58, Nr 1, pp 51-59

CONVERSION OF AN INFRARED IMAGE INTO A VISIBLE
IMAGE BY NONLINEAR OPTICAL METHODS

Voronin, F. S.; Dvylekeyev, M. I.; Il'inskiy, Yu. A.;
Solomatin, V. S.

Conversion of an image from the infrared to visible range in a nonlinear crystal is analyzed. The resolving power is estimated. Conversion from 1.06 to 0.53 microns in a KDP crystal is obtained; the resolving power is 18 lines per millimeter.

REEL/FRAME

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UDC 621.394.1

DIVNOGORTSEV, G.P.

"High-Frequency Data Transmission On Municipal Telephone Networks"

Elektrosvyaz', No 6, June 1972, pp 48-50

Abstract: The paper describes a method of organization of a direct (non-commutated) channel for data transmission between two subscribers at a short distance. It is proposed to multiplex the existing subscriber's physical lines after organizing another channel for them for data transmission in addition to the speech channel in the audio-frequency range. Some peculiarities of the spectrum selected, and level diagrams are presented. A scheme is presented by which it is possible to accomplish "rush" and "super-rush" exchanges of information between computing centers (communication switching centers) and their subscribers. The factors are discussed which assure transfer of information by the scheme without mutual interference between the channels of data transmission and of telephony. Also shown is: (1) A scheme for transmission of signals during an exchange of information between a subscriber's station and a computing center with the use of two subscriber's lines 4.3-km long; and (2) A block diagram of a high-frequency data transmission unit designed for a semiduplex exchange of information in the 8.5--11.5 kHz range with successive input and output of information at a speed from 50 to 2400 baud. 4 fig. 2 ref. Received, 27 July 1971.

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USSR

DIVNOGORTSEV, G. P., KARACHENTSEVA, N. Ya., and YASHIN, V. M.

"Data Transmission in Computer Center Nets" (book)

Minsk, "Nauka i Tekhnika" Publishing House, 1971, 177 pp

TRANSLATION OF TABLE 5 (p 150);

Parameters of General-Purpose Computers
Capable of Serving Communications Nets

Type of General-Purpose Computer	Addition Time, μsec	Working Storage Capacity, Thous. Wds	Word Length, bit	Access Time, μsec	1st Capacity Mill Wds	2nd Capacity Mill Wds	3rd Capacity Mill Wds	Number Channels	Served Data Transmission Rate, Bauds	Multi- program Capabil- ity	Cost, Thou. Rub. or Dollars
"Minsk-23" (USSR)	1	8-40	8	13	6	—	—	16	50	yes	250
"Minsk-32" (USSR)	10	8-32	32	5	32	—	—	32	20	"	150
"Ural-14" (USSR)	20	16-65	24	3	160,000	40	—	8	1200	"	300
"Ural-16" (USSR)	22	131-512	48	3	48,000	13	40	32	1200	"	500

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USSR

DIVNOGORTSEV, G. P., et al., "Nauka i Tekhnika" Publishing House, 1971, 177 pp

"Dnepr-2" (USSR)	25	4-65	65	—	39	—	—	700	—	"	—
"UNIVAC-418" (USA)	1,5	32-131	18	0,75	78	1	22	512	2400	"	240
"UNIVAC-490" (USA)	6,7	16-131	52	4,8	78	1	3	64	2400	"	—
"UNIVAC-9200" (USA)	101	8-16	8	1,2	9,6	—	—	—	2400	"	75
"UNIVAC-9300" (USA)	52	8-52	8	0,6	9,6	—	—	—	200400	"	345
"UNIVAC-9400" (USA)	62	31-192	8	0,6	—	—	60	24	250000	"	250
CDC-3150 (USA)	3500	8-32	24	1,75	—	—	—	—	2400	"	325
CDC-3600 (USA)	2	32-262	48	0,7	—	—	—	—	40800	"	1737
IBM-360 (USA)	0,8	16-1048	8	0,75	200	1,2	112	512	2400	"	5500
"Burroughs-8500" (USA)	0,6	65-1018	8	0,5	700	—	100	1024	2400	"	4200
"System 4-70" (England)	8,7	65-1018	8	1,5	—	2,0	250	80	4500	"	250
"Leo-326" (England)	8,4	3-32	48	2,5	—	—	1888	61	1200	"	300
"Fakom-230/30" (Japan)	56,1	8-32	6	2,2	—	18	60	160	50	"	—
"Boule-General Electric 105" (France)	7,5	4-8	18	—	—	—	2,0	—	2400	"	—

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1/2 015 UNCLASSIFIED PROCESSING DATE--02OCT70
TITLE--EXTRACTION OF AROMATIC HYDROCARBONS BY ACETATES OF NITRO ALCOHOLS
-U-
AUTHOR--(04)--DIYAROV, I.N., KOZLOV, L.M., BUREYEVA, R.R., SHCHEGLOVA, L.V.
COUNTRY OF INFO--USSR
SOURCE--KHIM. TEKHNL. TOPL. MASEL 1970, 15(3) 12-14
DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--ACETATE, ORGANIC NITRO COMPOUND, HYDROCARBON EXTRACTION,
AROMATIC HYDROCARBON, OCTANE, TOLUENE, NONANE, SOLVENT ACTION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRA--1992/1515

STEP NO--UR/0065/70/015/003/0012/0014

CIRC ACCESSION NO--AP0112509

UNCLASSIFIED

2/2 015

UNCLASSIFIED

PROCESSING DATE--02OCT70

CIRC ACCESSION NO--AP0112509

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. ACETATES OF NITRO ALCS. HAD A HIGH DISSOLVING CAPACITY AND GOOD SELECTIVITY FOR AROMATIC HYDROCARBONS, BUT THE EXTN. OF THE HYDROCARBONS DECREASED WITH AN INCREASE IN THEIR MOL. WT. THE MOL. WT. OF THE PARAFFINIC HYDROCARBONS IN THE MIXT. HAD THE GREATEST EFFECT ON THE AROMATIC HYDROCARBON CONC. IN THE EXT. THUS, THE EXTN. OF ISOOCTANETOLUENE (I) AND NONANE (II)-I MIXTS. WITH 3 SUB2 NCH SUB2 CHMEDAC GAVE EXT. CONTG. 60.2 AND 83.2PERCENT I, THE SEPN. COEFF. BEING 76.5 AND 61.1 VOL. PERCENT, RESP. IN THE CASE OF II-I AND II-O-XYLENE (III) MIXTS., THE EXT. CONTAINED 83.2PERCENT I AND 82.2PERCENT III, THE SEPN. COEFFS. BEING 61.1 AND 60.4 VOL. PERCENT, RESP. DUE TO THEIR EXCESSIVE DISSOLVING CAPACITY, THE ACETATES WERE RECOMMENDED ONLY AS COMPONENTS OF SELECTIVE SOLVENTS. WATER DECREASED THE STABILITY OF THE ACETATES.

UNCLASSIFIED

USSR

UDC 666.763.46.001.4

BRON, V. A., KUKURUZOV, A. P., ~~DIYESPEROVA, M. I.~~, and STEPANOVA, I. A., Eastern Institute of Refractories

"Magnesite-Chromite Products of High Purity Magnesite and Chromite"

Ogneupory, No. 2, 1971, pp 32-37

Abstract: The manufacturing technology, properties, and microstructural peculiarities are studied for products manufactured of magnesite and chromite with low contents of impurity oxides. The products have high refractory properties: the temperature at which deformation begins under load is 1700°C and higher, the bending strength at 1300°C is 2.5-3 times higher, and the deformation rate during creep tests 3 times lower than ordinary periclase-spinellide products. The products have good heat resistance, particularly if a small quantity of granular chromite is introduced to the charge. A direct bond is formed between the crystals of periclase -- periclase -- spinellide in the products. The presence of two forms of direct bonding is established.

1/1

USSR

DIYONISYADI, L. N.

"Experimental and Theoretical Studies of Tubes of High-Strength Steels"

4-ya Vses. Konf. po Probl. Ustoychivosti v Stroyit. Mekh., Tezisy Dokl. [Fourth All-Union Conference on Problems of Stability in Structural Mechanics, Theses of Reports -- Collection of Works], Moscow, 1972, p 219, (Translated from Referativnyy Zhurnal, Mekhanika, No 10, 1972, Abstract No 10 V378).

Translation: The deformed state is studied and the stability is tested of noncentrally compressed and extended circular cross-section rods. The studies are performed on specimens of electrically welded pipe $d = 168$ mm with wall thickness $\delta = 5$ mm of high-strength heat-treated steel with articulated boundary conditions with flexibility $\lambda = 40-80$ and relative eccentricity $m = 0.5-1.0$. Results of calculation of the specimens tested beyond the elasticity limit are presented. In the first case, the form of the bent axis of the rod was fixed by a sine wave, in a second version calculation was performed considering the true form of the bent axis. A comparative analysis of experimental and theoretical data is presented.

1/1

I/2 009 UNCLASSIFIED PROCESSING DATE--11SEP70
TITLE--SYNTHESIS OF PLATINUM (II) TETRAAMINE AND CISDIAMINE -U-
AUTHOR--KUKUSHKIN, YU.N., DKHARA, S.CH.
COUNTRY OF INFO--USSR
SOURCE--ZH. NEORG. KHIM. 1970, 15(2), 586-7
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--PLATINUM COMPLEX, CHEMICAL SYNTHESIS, AMMONIA
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1987/0309 STEP NO--UR/0078/70/015/002/0586/0587
CIRC ACCESSION NO--AP0103964
UNCLASSIFIED

2/2 009

UNCLASSIFIED

PROCESSING DATE--11SEP70

CIRC ACCESSION NO--AP0103964

ABSTRACT/EXTRACT--(U) GP-O-

ABSTRACT. BRIGHT YELLOW CIS (PT(NH SUB3) SUB2 NEGATIVE CL SUB2) WAS PREPD. IN 8.6 NH SUB4 OH, NH SUB4 CL BUFFER SOLN. BY MIXING K SUB2(PCL SUB4), NH SUB4 CL, AND NH SUB4 OH SOLNS. K SUB2(PCL SUB4) REACTS WITH CONCD. NH SUB4 OH SOLNS. K SUB2(PCL SUB4) REACTS WITH CONCD. NH SUB4 OH SOLN. AT THE B.P. AND IN THE PRESENCE OF METALLIC PT TO GIVE (PT(NH SUB3) SUB4)VL SUB2 TIMES H SUB2 O, 80PERCENT YIELD.

UNCLASSIFIED

- USSR

LINKHARD, J. Kh., DKHIR, V.

"Hydrodynamic Calculation of Maximum and Minimum Heat Fluxes During Boiling in an Open Volume"

Teplo. i Massoperenos. T. 2; Ch. 1 [Heat and Mass Transfer, Vol 2, Part 1 -- Collection of Works], Minsk, 1972, pp 274-298, (Translated from Referativnyy Zhurnal, Mekhanika, No 10, 1972, Abstract No 10 B847, by A. A. Ivashkevich).

Translation: Based on the hydrodynamic theory of the boiling crisis, the influence of shape and dimensions of a heater on the first ($q_{\max}$) and second ($q_{\min}$) critical heat flux densities during boiling of a fluid under natural convection conditions is analytically studied. Expressions are produced for heaters of various shapes for the ratio $q_{\max}/q_{\min F}$, where $q_{\max F}$ is the first critical heat flux density determined from the Zuber equation (Zuber, N., AEC Rept. 1959, No AECU-4439) for a flat surface of unlimited size

$$q_{\max F} = \frac{\pi}{24} \rho_L^{1/2} h_{fg} \sqrt{g(\rho_L - \rho_g)}$$

where g is the acceleration of the force of gravity, h_{fg} is the heat of evaporation

USSR

LINKHARD, J. Kh., DKHIR, V., Teplo. i Massopereenos. T. 2, Ch. 1, Minsk, 1972, pp 274-298.

poration, ρ_f and ρ_g are the density of the liquid and vapor, σ is the surface tension. For large heaters, the values of ratio $q_{\max}/q_{\max F}$ are: 1.14 for flat plates, 0.904 for horizontal cylinders, 0.84 for spheres, 0.9 for strips on a rib. For small heaters, expressions are produced for $q_{\max}/q_{\max F}$ which include the surface dimensions. Comparison of the results produced with experimental data from various studies show satisfactory results. Expressions are also produced where $q_{\min}$ for horizontal plates and cylinders.

27 Biblio. Refs.

USSR

UDC 519.281

DLIN, A. M.

"General Theory of Estimating the Center of a Symmetrical Distribution By Order Statistics"

Opyt. Primeneniya Mat.-Statist. Metody v Proiz-ve, [Experience in Application of Mathematical Statistics Methods to Production--Collection of Works], Moscow, Mashinostroyeniye Press, 1970, pp 12-16, (Translated from Referativnyy Zhurnal Kibernetika, No 5, 1971, Abstract No. 5V142 by Ya. Shor).

Translation: A method of construction of a linear unbiased estimate of the median of a symmetrical distribution with minimal dispersion among linear estimates is presented for the case of correlated random quantities.

1/2 013 UNCLASSIFIED PROCESSING DATE--09OCT70
TITLE--ACCURATE DETERMINATION OF THE DENSITY OF WEAK SOLUTIONS AT VARIOUS
TEMPERATURES -U-
AUTHOR--(05)-TERESHKEVICH, M.O., GARUS, L.I., DLUGACH, R.YE., KUPRIK, A.V.,
VOLKOVA, S.A.
COUNTRY OF INFO--USSR
SOURCE--ZH. PRIKL. KHIM. (LENINGRAD) 1970 43(1) 167-70
DATE PUBLISHED--70
SUBJECT AREAS--PHYSICS
TOPIC TAGS--FLUID DENSITY MEASUREMENT, TEMPERATURE
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--1993/0300 STEP NO--UR/0080/70/043/001/0167/0170
CIRC ACCESSION NO--AP0113230
UNCLASSIFIED

2/2 013

UNCLASSIFIED

PROCESSING DATE--09OCT70

CIRC ACCESSION NO--AP0113230

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A FLOTATION METHOD IS DESCRIBED FOR RAPID DETN. OF D. WITH AN ACCURACY OF 10 NEGATIVE PRIMES G-CM PRIME3. THE D. OF SEVERAL HOLLOW QUARTZ FLOATS OF 10-12 MM LENGTH AND 1-2 MM DIAM. WAS CALIBRATED BY DETN. OF THE TEMP. AT WHICH THEY WOULD JUST FLOAT IN H SUB2 O. THE FLOATS WERE USED TO DET. THE D. OF AQ. SOLNS. OF K SUB2 CR SUB2 O SUB7 IN THE CONC. RANGE 0.1 MINUS 0.2 G-L. AND TEMP. RANGE 10-35DEGREES. FACILITY: DNEPROPETROVSK. GOS. UNIV., DNEPROPETROVSK, USSR.

UNCLASSIFIED

1/2 027
TITLE--A SEMICONDUCTOR TIME PULSE DIFFERENTIAL RELAY WITH RESTRAINT -U-
AUTHOR--DMITRENKO, A.M.
COUNTRY OF INFO--USSR
SOURCE--NOVOCHERKASSK, IZVESTIYA VYSSHIKH UCHEBNYKH ZAVEDENIY,
ELEKTROMEKHANIKA, NO 3, 1970, PP 335-337
DATE PUBLISHED--70
SUBJECT AREAS--ELECTRONICS AND ELECTRICAL ENGR.
TOPIC TAGS--ELECTRIC RELAY, SEMICONDUCTOR DEVICE, CIRCUIT DESIGN
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--1999/1656
CIRC ACCESSION NO--AT0123491
STEP NO--UR/0144/70/000/003/0335/0337
UNCLASSIFIED

2/2 027

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AT0123491

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A SEMICONDUCTOR DIFFERENTIAL RELAY WHOSE PRINCIPLE OF ACTION CONSISTS IN SEPARATING INTERVALS FROM THE CURRENT AND COMPARING THEIR DURATION WITH A PRESET TIME IS DESCRIBED. THE RELAY CIRCUIT IS DESIGNED SO THAT THE INTERVAL FORMATION LEVEL RISES WITH THE INCREASE OF THE AMPLITUDE OF CIRCULATING CURRENT, WHICH ENSURES AN IMPROVED TUNING OUT BOTH WITH RESPECT TO TRANSIENT AND STEADY IMBALANCE CURRENTS. THE ANALYSIS IS MADE OF THE OPERATION OF THE RELAY UNDER TRANSIENT AND STEADY STATE CONDITIONS, AS WELL AS A BRIEF DESCRIPTION OF THE SEMICONDUCTOR ELEMENTS USED IN IT.

UNCLASSIFIED

USSR

UDC: 537.312.62

DMITRENKO, I. M.

"High-Frequency Properties of Weakly Coupled Superconductors"

Elektron. tekhnika. Nauchno-tekhn. sb. Kriogen. elektronika (Electronic Technology. Scientific and Technical Collection. Cryogenic Electronics), 1970, vyp. 1 (2), pp 13-27 (from RZh-Radiotekhnika, No 2, Feb 71, Abstract No 2D582)

Translation: The article contains a brief survey of the results of studies of the rf properties of superconductors weakly intercoupled by a tunnel or metallic direct contact. A discussion is given of the possible model representations of the nature of the resistive state of various types of superconducting weak contacts. An investigation is made of experimentally observed spectral singularities of the various types of contacts which permit a united quantitative treatment based on the form of current-time dependence. A new interpretation is proposed for a number of experimental factors observed on tunnel and point contacts. Resumé.

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- 83 -

1/2 028
TITLE--SUPERCONDUCTOR NORMAL METAL SUPERCONDUCTOR
CONTACTS -U-
AUTHOR--(03)-BONDARENKO, S.I., DMITRENKO, I.M., BALANOV, E.I.
COUNTRY OF INFO--USSR
SOURCE--FIZ. TVERD. TELA 1970, 12(5), 1417-22
DATE PUBLISHED-----70
SUBJECT AREAS--ELECTRONICS AND ELECTRICAL ENGR., PHYSICS
TOPIC TAGS--SUPERCONDUCTOR, CONTACT RESISTANCE, RESONATOR, VOLT AMPERE
CHARACTERISTIC
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--3005/0972
CIRC ACCESSION NO--AT0133058
STEP NO--UR/0181/70/012/005/1417/1422
UNCLASSIFIED

2/2 028

UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AT0133058

ABSTRACT/EXTRACT--(U) GP-0-

ABSTRACT.

THE PECULIARITIES WERE STUDIED OF THE STEADY STATE AND UNSTEADY STATE JOSEPHSON EFFECTS IN THE SUPERCONDUCTOR NORMAL METAL SUPERCONDUCTOR (S-N-S) POINT CONTACTS TA-AG-SN AND SN-AG-SN: DEPENDENCES OF THE CRIT. CURRENTS OF CONTACTS, IOTA SUBC, ON THEIR NORMAL RESISTANCE, R SUBN, TEMP. TAU, THICKNESS OF THE LAYER OF NORMAL METAL D, THE EFFECTS OF RESISTANCE AND THICKNESS ON THE CRIT. TEMP. OF CONTACTS TAU SUBC AND THE CONDITIONS OF OBSERVATION OF INTRINSIC CURRENT STEPS ON VOLT AMPERE CHARACTERISTICS OF THE CONTACTS LOCATED IN A SUPERCONDUCTING RESONATOR. AN EMPIRICAL FORMULA WAS OBTAINED FOR THE CRIT. FIELD; THE DEPENDENCE OBTAINED CORRESPONDS WELL TO THE THEORY OF THE PROXIMITY EFFECT IN THE SYSTEMS S-N-S IN THE LIMIT (SHOWN ON MICROFICHE) (IOTA IS THE FREE PATH LENGTH AND (SHOWN ON MICROFICHE) WHERE UPSILON SUBF IS THE FERMI VELOCITY). FACILITY: FIZ.-TEKH. INST. NIZKIKH TEMP., KHARKOV, USSR.

UNCLASSIFIED

Acc. Nr. **170034403**

Ref. Code: UR 0297

PRIMARY SOURCE: Antibiotiki, 1971, 15, Nr 2, pp 181-185
LEVELS OF ASCORBIC ACID IN BLOOD PLASMA AND URINE AND RESISTANCE
OF SKIN CAPILLARIES IN PERSONS OCCUPIED IN STREPTOMYCIN PRODUCTION

V. M. Selivanova, N. P. Dobronravova, M. Chelnokova

National Institute for Vitaminology, Moscow

Examination of more than 100 persons (mainly women) at the age of 18 to 40 occupied in streptomycin production showed relatively low levels of ascorbic acid in blood plasma and resistance of their skin capillaries. Additional vitaminization of the workers for 2.7 and 10.5 months with vitamin complexes, containing 70 or 150 mg of vitamin C, 1.5 mg of vitamin A, 1.7 mg of vitamin B₁, 2.2 mg of vitamin B₂, 18 mg of vitamin PP and 2 mg of vitamin B₆ did not increase the ascorbic acid levels in blood plasma, while the acid excretion with morning urine significantly increased. The tonic effect on the capillaries was observed only with a complex containing 150 mg of vitamin C. Addition of tea catechins in an amount of 90 mg a day did not increase the effect. Vitamin complexes containing 70 and 150 mg of vitamin C had no tonic effect on the capillaries of workers occupied in streptomycin production. It is concluded that additional vitaminization of workers occupied in streptomycin production with the above vitamin complex containing 150 mg of vitamin C is necessary.

REEL/FRAME

19711063

D. H.
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AA0052392-

DMITRENKO

I. YE.
UR 0482

Soviet Inventions Illustrated, Section II Electrical, Derwent,

1/70

240735 DIGITAL CODE TRACK CIRCUIT includes circuits 1 & 2 fed by generator 2, pulse relay 3, synchronising unit 5, delay circuit 6, pulse control unit 7 for the generator, decoder 8, filter 9, transmitter 10 and signal relays 11 & 12. The track circuit is fed with contacts of relays 4 and 6 closed. Commutator 7 is operating when the track circuit carries current, and breaks the supply of relays 4 & 6. The delay circuit permits the required pulse duration in circuit 1 to be maintained.

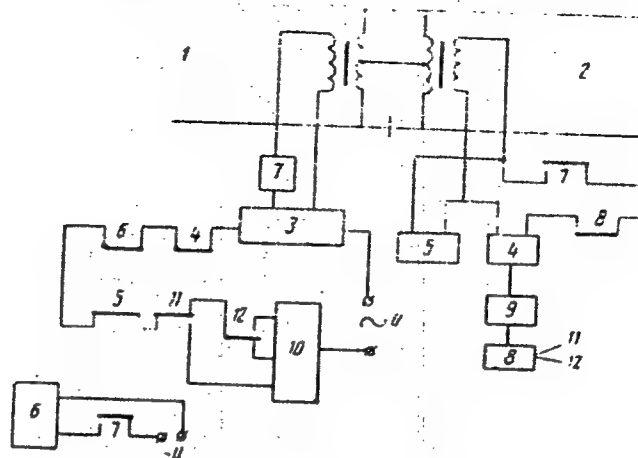
8.12.67 as 1202177/18-24. A.M. BRYLEEV et alia.
MOSCOW INST. OF RAILWAY ENGINEERS (14.8.69) Bul
13/1.4.69. Class 201. Int.Cl. B 611.

1/2

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19820995

AA0052392



Bryleyev, A. M.; Maslyukov, O. A.; Dmitrenko, I. Ye.; Stepenskiy, B.M.
Moskovskiy Institut Inzhenerov Zheleznodorozhnogo Transporta

2/2

19820996

nt

USSR

UDC 62-533.65

DUDKIN, R.I., DMITRENKO, L.P.

"Two-Position Temperature Regulator"

USSR Author's Certificate No 257171, Filed 10/07/68, Published 2/04/70
(Translated from Referativnyy Zhurnal Avtomatika, Telemekhanika i Vychislitel'naya Tekhnika, No 12, 1970, Abstract No 12 A289P by K.M.)

Translation: The two-position temperature regulator suggested contains a thermal resistor which controls, connects and disconnects thyratrons (T) connected to the coil of the actuating electromagnet in a resonant circuit. The grid of the connecting T is connected to the plate circuit of the control T through a divider capacitor, while the grid of the disconnecting T is connected to a photoresistor, optically coupled to the controlling T. The presence of the divider capacitor eliminates repeated switching of the connecting T. One figure.

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- 22 -

USSR

UDC 621.387.322

DMITRENKO, L.P., DUDKIN, R.I.

"Method For Control Of Thyatron"

USSR Author's Certificate No 261553, filed 30 Mar 66, published 14 May 70 (from RZh--Elektronika i yeye primeneniye, No 1, January 1971, Abstract No 1A119P)

Translation: An improvement of the method of control is proposed for a thyatron which is fired by a current pulse of arbitrary form and duration, during which arcing of the thyatron is maintained as a consequence of feeding the anode circuit from two sources, one being a source of a-c and the other of d-c. By hypothesis the source of d-c is quantized with respect to time and the power supply of the anode circuit is accomplished from the two sources simultaneously. Such a circuit assures simplification and expansion of the limits of control of the thyatron. V. M.

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- 111 -

USSR

UDC: 616.24-008.4.-07:616.152.21+616.154.19

YAROSHKIN, V. S., and DMITRENKO, L. V., First Therapeutic Department, and Laboratory of Clinical Physiology, Central Institute of Tuberculosis, Ministry of Health USSR

"Study of Arterial Blood Gases After Physical Exertion as a Means of Evaluating Respiratory Function"

Moscow, Patologicheskaya Fiziologiya i Eksperimental'naya Terapiya, Vol 14, No 6, Nov/Dec 70, pp 68-70

Abstract: Respiratory function was studied in 30 pulmonary tuberculosis patients and 12 healthy persons. Sadoul's method was used in interpreting the results of analysis of arterial blood gases, based on the interdependence of oxygen saturation of arterial blood, partial pressure of carbon dioxide, and shape of the oxygen-hemoglobin dissociation curve. Measurements were taken while the individuals were resting and after they had pedalled for several minutes on bicycle ergometer. Five types of respiratory insufficiency, corresponding to the degree of alveolar hypoventilation and dissemination of tuberculosis were distinguished on the basis of the response to exercise. The reactions ranged from no changes or only a slight

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USSR

YAROSHKIN, V. S., and DMITRENKO, L. V., Patologicheskaya Fiziologiya i Eksperimental'naya Terapiya, Vol 14, No 6, Nov/Dec 70, pp 68-70

(1-2%) decrease in the extent of oxygen saturation of arterial blood, accompanied by fluctuations in pCO_2 within normal limits (type 1), to marked deficiency of blood oxygenation and a parallel increase in pCO_2 (type 5).

2/2

Acc. Nr.

0036526

Ref. Code: UR 0069

PRIMARY SOURCE: Kolloidnyy Zhurnal, 1970, Vol 32, Nr 1,
pp 37-40

EFFECT OF ASSOCIATION ON THE ORGANIC IONS EXCHANGE

L. V. Dmitrenko, A. Sh. Genedi, G. V. Samsonov

Summary

The sorption of an organic ion-oxytetracycline (OTC) by polysulfostyrene cationites has been studied. The selectivity coefficient of sorption rises with increasing ionic strength of the solution, and the diffusion coefficient decreases both with increasing ionic strength and with rising OTC concentration in external solution. Under certain conditions-for ionite with low swelling ability or with large ionic strength-the sorption isotherms of OTC do not show saturation, but pass through a maximum. The results are discussed in terms of the formation of associates in the ionite phase and in the solution.

D. 42

REEL/FRADE

19721374

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DMITRENKO, L. V.

Acc. Nr: AP0044384

Ref. Code: UR 0463

PRIMARY SOURCE: Molekulyarnaya Biologiya, 1970, Vol 4, Nr 1,
pp 118-127

INVESTIGATION OF HISTONE STRUCTURE

Ramm, Ye. I.; Birshteyn, T. M.; Bolotina, I. A.;
Vorob'ev, V. I.; Dmitrenko, L. V.; Nekrasova, T. N.;
Vol'kenshteyn, M. V.

Institute of Cytology and Institute of High-Molecular Weight
Compounds, Academy of Sciences, USSR, Leningrad
and Institute of Molecular Biology, Academy of Sciences, USSR, Moscow

The structure of four histone fractions (H_1 , $H_2(a)$, $H_2(b)$, H_3) has been studied by the methods of optical rotatory dispersion, potentiometric titration and viscometry. The analysis of the data obtained made it possible to draw a conclusion that histones are not globular proteins. The dependence of reduced viscosity on the charge of the molecule and the ionic strength of the solution showed that the dimensions of the histone molecules depend to a large extent upon the forces of electrostatic interaction. This suggests that the histone molecules are conformationally flexible and probably exhibit the conformation of a statistical coil with the incorporation of helical regions.

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The potentiometric titration curves have been obtained for all the histone fractions and have been used for calculating the number of ionizable groups, for determining their pK' and the change in the mean overall charge of the molecules with the pH alteration of the medium. The effect of pH and the ionic strength of the solution on the α -helix content of various histone fractions was studied. The data obtained were compared and a conclusion was drawn about the non-uniform distribution of the charged groups in the histone molecules. On one hand, histones contain at neutral pH coil shaped sequences enriched with basic amino acid residues with high density of the positive charge and on the other hand, regions capable to form helical structures and containing both acid and basic amino acid residues. A model is proposed describing the structure of histones.

The important differences between histone fractions were shown to exist mainly due to the distribution of the charges along the chain.

2/2

19771001

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1/2 020 UNCLASSIFIED PROCESSING DATE--18SEP70
TITLE--INTRAMOLECULAR SALT BONDS IN SYNTHETIC POLYAMPHOLYTE; A COPOLYMER
OF 2 METHYL 5 VINYL PYRIDINE AND METHACRYLIC ACID -U-
AUTHOR--(04)-KIPPER, A.I., DMITRENKO, L.V., PTITSYN, O.B., SOGOMONYANTS,
ZH.S.
COUNTRY OF INFO--USSR
SOURCE--MOLEKULYARNAYA BIOLOGIYA, 1970, VOL 4, NR 2, PP 175-183
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--COPOLYMER, PYRIDINE, METHACRULIC ACID, POTENTIOMETRIC
TITRATION, SPECTROPHOTOMETRIC ANALYSIS, INTRAMOLECULAR MECHANICS,
CHEMICAL BONDING, PROTEIN
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--1984/1716 STEP NO--UR/0463/70/004/002/0175/0183
CIRC ACCESSION NO--AP0100313
UNCLASSIFIED

2/2 020

UNCLASSIFIED

PROCESSING DATE--18SEP70

CIRC ACCESSION NO--AP0100313

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE INVESTIGATION WAS CARRIES OUT OF ELECTROCHEMICAL AND CONFORMATIONAL PROPERTIES OF A WATER SOLUBLE COPOLYMER OF 2 METHYL 5 VINYL-PYRIDINE AND METHACRYLIC ACID (50:50) BY POTENTIOMETRIC TITRATION, SPECTROPHOTOMETRIC TITRATION (FROM ULTRAVIOLET AND INFRARED SPECTRA) AND BY VISCOMETRY. IT WAS SHOWN THAT IN THE PH RANGE FROM SIMILAR 2 TO SIMILAR TO 7 AN INTRAMOLECULAR SALT BOND WAS FORMED OF THE TYPE NH PRIME PLUS COO WITHOUT COUNTER IONS FROM THE SOLUTION. ABOUT 30PERCENT OF GROUPS OF EACH TYPE WAS INVOLVED IN THE SALT BONDS. THE OCCURRENCE OF INTRAMOLECULAR FORCES OF ELECTROSTATIC ATTRACTION LEADS TO A MORE COMPACT CONFORMATION OF THE MACROMOLECULE AS COMPARED WITH THAT OF THE GAUSSIAN COILS. THE PROPERTIES AND BEHAVIOUR OF THE AMPHOLYTE PERMITS TO CONSIDER IT AS AN APPROXIMATED PROTEIN MODEL.

UNCLASSIFIED

1/2 034 UNCLASSIFIED
TITLE--ENERGETIC ASPECTS OF THE DIRECT CONVERSION OF CHEMICAL ENERGY TO
ELECTRICITY -U- PROCESSING DATE--27NOV70
AUTHOR--(03)-LIDORENKO, N.S., MUCHNIK, G.F., DMITRENKO, V.I. D
COUNTRY OF INFO--USSR, UNITED STATES
SOURCE--4TH ANNUAL INTERSOCIETY ENERGY CONVERSION ENGINEERING CONFERENCE
WASHINGTON, U.S.A.
DATE PUBLISHED-----70
SUBJECT AREAS--BEHAVIORAL AND SOCIAL SCIENCES, ELECTRONICS AND ELECTRICAL
ENGR., ENERGY CONVERSION (NON-PROPULSIVE)
TOPIC TAGS--ELECTRIC ENGINEERING CONFERENCE, CHEMICAL ENERGY CONVERSION,
DIRECT ENERGY CONVERSION, FUEL CELL, ELECTRONIC COMMUTATOR
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3006/1664 STEP NO--US/0000/70/000/000/0000/0000
GIRC ACCESSION NO--AT0135272
UNCLASSIFIED

2/2 034

UNCLASSIFIED

PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AT0135272

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE MAIN ENERGETIC ASPECTS OF THE PROBLEM USING AS AN EXAMPLE FUEL CELLS ARE ANALYZED. ENERGETIC INTERPRETATION OF ENERGY GENERATION IN FUEL CELLS IS GIVEN. ACCORDING TO THE ACCEPTED ENERGETIC ASPECT THE CHEMICAL REACTION BETWEEN OXIDANT AND FUEL IS CONSIDERED AS ELECTRONIC PROCESS. AS A RESULT OF THE CHEMICAL REACTION ELECTRON TRANSFER IN MOLECULAR STRUCTURES FROM HIGH ENERGY STORAGE LEVELS TO LEVELS WITH LESS ENERGY STORAGE IS OBSERVED. THE TASK IS TO ASSURE PROCESS UNIFORMITY DURING SUCH INTERMEDIATE REACTIONS (FOR EXAMPLE, PRELIMINARY IONIZATION, HETEROGENEOUS CATALYSIS AND ETC). WHICH COULD LEAD TO MINIMUM ENERGY LOSSES WHEN COMMUTATING ELECTRONS IN THE FUEL CELL DESIGN BEFORE THEIR REJECTION INTO AN EXTERNAL ELECTRIC CIRCUIT.

UNCLASSIFIED

AA0043451

DMITRENKO V.YE.
UR 0482

Soviet Inventions Illustrated, Section II Electrical, Derwent,

242996 PULSE SUPPLY TO LOAD FROM SEVERAL CHEMICAL
FEED SOURCES where to ensure continuous
supply and to increase average power and total
discharge time, the chemical sources are charged
by pulse current during the intervals between dis-
charging pulses.

The chosen charge current intensity is from
10 milliamps/cm² to 20 amp/cm², duration 1 micro-
second to 10 seconds, pulse frequency 1 KHZ to
0,01 HZ.

30.11.67 as 1201476/24-7. I.I. PYATNITSKIY & V.YE.
DMITRENKO (19.9.69) Bul 16/5.5.69. Class 21b, 21c.
Int.Cl.H 01m, H 02j.

19761804

Acc. Nr.

AP0034102

Abstracting Service:

CHEMICAL ABST. 4-70

Ref. Code

UR0078

D

71194p Thermal stability and solubility of $\text{Al}_2(\text{SiF}_6)_3 \cdot 3\text{H}_2\text{O}$.
Semenova, E. B.; ~~Dmitryevskiy, G. E.~~ (USSR). *Zh. Neorg.
Khim.* 1970, 15(1), 57-8 (Russ). Soly. of $\text{Al}_2(\text{SiF}_6)_3 \cdot 3\text{H}_2\text{O}$ (I),
in H_2SiF_6 decreases with increasing concn. of acid in soln. and
with increasing temp. At 25°, soly. of I in water is 30.48g /l.
Thermal stability of I was investigated at 100-900°. I is stable
up to 350°, at 380° it loses water. Formed $\text{Al}_2(\text{SiF}_6)_3$ undergoes a
series of transitions at 560-730°. At higher temps., decompn.
products are AlF_3 , $\text{Al}_2\text{P}_2\text{O}_7$, SiO_2 , and $\text{Al}_2\text{Si}_2\text{F}_{10}\text{O}_7$. HMJR

REEL/FRAME

19710745

18

di

USSR

UDC: 531.383 + 62 — 752.4

DMITRIEV, G. N.

"On Three-Stage Gyroscope With Flexible Rotor Suspension"

Tr. Kazan. aviats. in-ta (Transactions of Kazan Aviation Institute) 1971, vyp 138, pp 58-64 (from Referativnyy Zhurnal-Raketostroyeniye, No 7, 1972, Abstract No 7.41.166)

Translation: The motion of a gyroscope with flexible suspension, mounted on a mobile base, is investigated. Recommendations are given on the selection of parameters for a gyroscope having a low systematic drift. It is shown that constant disturbing moments acting on the axis of rotor suspension, centrifugal inertia momentums, displacements of ring and rotor centers of mass in the equatorial plane, as well as the acceleration component of the translation of the base along the axis of the driving shaft, do not cause a systematic drift of the gyroscope (12 illustrations, 3 references, resume).

1/1

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Organometallic Compounds

USSR

UDC: 542.91+547.244+547.84

MIKHAYLOV, B. M., VASIL'YEV, L. S., and DMITRIKOV, V. P., Institute of Organic Chemistry imeni N. D. Zelinskiy, Academy of Sciences USSR

"2-Alkyl-Oxaborinanes"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No. 1, Jan 70, pp 198-199

Abstract: New type heterocyclic B compounds, 2-alkyl-oxaborinanes (I) were prepared by hydrolyzing $\text{Br}(\text{CH}_2)_4\text{B}(\text{OMe})\text{R}$ (II) with aqueous KOH or NaHCO_3 . Hydrolyzing II with KOH in MeOH gave derivatives of delta-(methoxy)butylboric acid. I reacted with MeONa in MeOH to give $\text{MeO}(\text{CH}_2)_4\text{B}(\text{OMe})\text{Bu}$ (III). Ia reacted vigorously with PCl_5 to yield 96% of $\text{Cl}(\text{CH}_2)_4\text{B}(\text{Cl})\text{Bu}$ (IV). The elemental analysis data, bp, d^{20}_4 , and n^{20}_D data were given for IIa, IIb, III, and IV.

1/1

Acc. Nr:

AP0100226

Abstracting Service:

CHEMICAL ABST.

Ref. Code:

4R0062

111545n 2-Alkyl-1,2-oxaborinanes. Mikhailov, B. M.; Vasil'ev, L. S.; Dmitrikov, V. P. (Inst. Org. Khim. im. Zelin-skogo, Moscow, USSR). *Izv. Akad. Nauk SSSR, Ser. Khim.* 1970, (1), 198-9 (Russ). Hydrolysis of $\text{RB(OMe)(CH}_2\text{)}_3\text{Br}$ with aq. KOH or NaHCO_3 gave 2-alkyl-1,2-oxaborinanes with R = Bu (I), b_p 50.5-51°, d_4^{20} 0.8523, n_D^{20} 1.4338, and R = C_6H_{11} , b_p 61.5-63.5°, 0.8488, 1.4396. However, reaction with KOH in MeOH led to replacement of Br and formation of $\text{MeO(CH}_2\text{)}_3\text{B-BuOMe}$, b_p 89°, 0.8473, 1.4244. Reaction of I with I^+Cl_3^- gave $\text{Cl(CH}_2\text{)}_3\text{BBuCl}$, b_p 64-65°, 0.9876, 1.4501, and POCl_3 .

G. M. Kozolapoff

REEL/FRAME

19841616

USSR

UDC 537.312.62

KOLIN'KO, L. YE., NARBUT, T. P., BONDARENKO, L. A., BONDARENKO, S. I.,
DMITRIYENKO, I. M.

"Methods of Creating Weak Superconducting Contacts"

Tr. Fiz.-tekhn. in-t nizk. temperatur AN USSR (Works of the Physico-Technical
Low Temperature Institute of the Ukrainian SSR Academy of Sciences), 1970,
vyp. 9, pp 91-110 (from RZh-Radiotekhnika, No 4, Apr 71, Abstract No 4D469)

Translation: A study was made of the basic methods of obtaining weak super-
conducting contacts: 1) micropuncture of the dielectric layer or normal
metal between the superconductors; 2) pressing a sharp needle to the flat
surface of the superconductor; 3) electric microrupture (fritting) of the
dielectric layer between the metals. The possibility of using whiskers of
various metals as thin conducting couplings is also investigated. The basic
characteristics of the contacts obtained by the enumerated methods are
analyzed, and conclusions are drawn regarding the prospectiveness of their
application in devices using the phenomenon of quantum interference in super-
conductors. There are 6 illustrations, 1 table and a 37-entry bibliography.

1/1

AA0039789 -

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DMITRIYENKO, N.N.

UR 0482

Soviet Inventions Illustrated, Section I Chemical, Derwent; 1-76

239470 SLAG CONTENT ANALYSIS using spectroscopy where a single drop of molten slag is taken from the process and placed in a specially built micro-furnace which keeps the slag in molten state. The bottom graphite plate of the furnace together with the slag drop form one electrode; the second electrode being made of copper. Spark or arc discharge across the electrodes emits a spectrum from the slag drop, which then is analysed and slag composition determined. This method of slag analysis is recommended especially for slag welding process.

29.1.68 as 1213751/25-27. N.N. DMITRIENKO et alia.

E.O. PATON'S ELECTRO-WELDING INST. (25.7.69) Bul 11/

18.3.69. Class 21h. Int.Cl. B 23k.

42
18
20
19741102

AA0039789

AUTHORS: Dmitriyenko, N. N.; Podgayetskiy, V. V. and Medovar, B. I.

Institut Elektrosvarki imeni Ye. O. Patona

2/v

19741103

USSR

UDC 621.762.2:669.22

CHIZHIK, S. P., SHTAYNBERG, A. N., KAGAN, E. M., KHASIN, E. I., SHELEST, A. YE.,
DMITRIYENKO, V. YE., and LAYNER, D. I.

"Method of Producing Silver Granules"

USSR Authors' Certificate No 267079, Cl. 40b, 1/04; 31 b³, 9/00, (E 22f), filed
27 Apr 67, published 16 Jul 70 (from RZh-Metallurgiya, No 3, Mar 71, Abstract
No 3G404P by S. Krivonsova)

Translation: An alloy containing up to 50% Ag, the rest Al, is rolled into
strip and treated in alkali. In order to produce granules with up to 0.5%
Al content, the initial alloy is rolled into strip up to 0.5-5 mm in thick-
ness, and before alkali treatment is heated to 540-560°, held for 1.5 hr in
an inert atmosphere until a solid solution of Ag in Al forms, and is hardened.

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USSR

UDC: 519.2

DMITRIYEV, A. A.

"Orthogonal Functions $\Delta_m(x)$ Based on a Normal Distribution Law"

Tr. Mosk. ekon.-stat. in-ta (Works of Moscow Institute of Statistical Economics), 1971, vyp. 4, ch. 2, pp 98-103 (from RZh-Kibernetika, No 4, Apr. 72, Abstract No 4V98)

[No abstract]

1/1

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Cardiovascular Diseases

USSR

UDC 616.127-005.8:613.13+312.2]-02:
613.13

GOROKHOVSKIY, B. I., DMITRIYEV, A. A., LOKSHINA, P. L., and REMIZOV, G. A.,
First Aid Institute imeni N. V. Sklifosovskiy, Moscow University imeni M. V.
Lomonosov, Interdepartmental Meteorological Laboratory, and First Aid Station,
Moscow

"Influence of Environmental Factors on Morbidity and Mortality Rates for
Myocardial Infarct"

Moscow, Sovetskaya Meditsina, No 4, 1971, pp 105-109

Abstract: Analysis of over 5,000 cases of myocardial infarct and acute coronary insufficiency in Moscow revealed a definite correlation between the morbidity and mortality rates of these diseases and various meteorological and geophysical factors. Sharp changes in atmospheric pressure in winter resulted in a rise in the mortality rate the same day to 194% of the seasonal mean. A lowering of the mean diurnal temperature in summer by 5° or more increased mortality on the 2d day to 150% of the seasonal mean. Magnetic storms with a sudden onset increased mortality from acute coronary insufficiency and myocardial rupture to 165% three days later regardless of the time of year. Abrupt changes in temperature, solar activity, and so forth are believed to

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USSR

GOROKHOVSKIY, B. I., et al., Sovetskaya Meditsina, No 4, 1971, pp 105-109

impair the neuroregulatory apparatus and/or alter vascular tone, resulting in regional (coronary, cerebral) circulatory disorders. (The authors' analysis was based on the phase matching method whereby the day the phenomenon under study occurs is taken as zero, the preceding days as -1, -2, etc. and the subsequent days as +1, +2, etc.).

2/2

USSR

UDC 669.71.472

DERKACH, A. S., DMITRIYEV, A. A., KOROBV, M. A., KOMERS, YE. G., KULAKOV, A. I.,
TSYPLAKOV, A. M.

"Improving the Design of Aluminum Electrolyzers"

Tr. Vses. n.-i. i proyekt. in-ta alyumin., magn. i elektrod. prom-sti
(Works of the All-Union Scientific Research and Planning and Design Institute
of Aluminum, Magnesium and Electrode Industry), 1970, No 71, pp 29-36 (from
RZh-Metallurgiya, No 4, Apr 71, Abstract No 4G165)

Translation: A description of improvements of electrolyzers of various types is presented. In the last 10-15 years, electrolyzers with a side current lead-in have been modified significantly. Work has been started on creating powerful models for a current strength of 130 kiloamps. Since the first series of electrolyzers with top lead-in were put into operation, significant changes have been introduced into their structural design. These changes have promoted improvement of the technical and economic indexes. Operations have developed with respect to selecting the optimal parameters of powerful electrolyzers with roasted anodes. Electrolyzers of the given type for a current strength of 130 kiloamps are being tested successfully. For further improvement

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USSR

DERKACH, A. S., et al., Tr. Vses. n.-i. proyekt. in-ta alyumin., magn. i elektrodn. prom-sti, 1970, No 71, pp 29-36

of the design of electrolyzers of all three types, new ideas are needed based on theoretical research and the search for new, more efficient structural designs of the basic assemblies and baths, and creation of effective means of mechanization.

2/2

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Acc. Nr: **A70103019**

Abstracting Service: **6-70**
INTERNAT. AEROSPACE ABST.

Ref. Code:

DMITRIYEV **4A0020** **A.A.**

A70-25397 //

Estimation of the structure of the solar corona from a rocket experiment on February 15, 1961 (Otsenka struktury solnechnoi korony po raketnomu eksperimentu 15 II 1961 g.). **A.A. Dmitriev, R. G. Indzhia, A. E. Mikirov, and S. M. Poloskov** (Moskovskii Gosudarstvennyi Universitet, Moscow, USSR). *Akademiia Nauk SSSR, Doklady*, vol. 190, Feb. 1, 1970, p. 803, 804. In Russian.

Determination of the brightness distribution in the outer solar corona from information obtained by rockets equipped with scanning devices during a solar eclipse. The problem of determining the true brightness from an integral equation giving the relation between the experimentally observed brightness and the true brightness is considered. It is found that, starting from a measurement error of 9.5%, the reconstructed function does not have any negative roots, thus reliably indicating that the error in the initial data is no less than 9.5%.

A.B.K.

REEL/FRAME
19861101

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12

DMITRIYEV A.A.

Acc. Nr.: AN0104123

Ref. Code: UR 9003

TITLE-- ANNOUNCEMENT OF THE COMMITTEE ON LENIN AND STATE PRIZES, U.S.S.R.

NEWSPAPER-- IZVESTIYA, MAY 28, 1970, P 4, COLS 1-5

ABSTRACT-- NINETY ONE BASIC AND APPLIED RESEARCH WORKS HAVE BEEN NOMINATED FOR THE STATE PRIZES. TWO OF THESE, "THE MULTI-PURPOSE INDUSTRIAL HELICOPTER KA-26", BY N. I. KAMOV, V. B. AL PEROVICH, V. B. BARSHEVSKIY, A. A. DMITRIYEV, G. I. IOFFE, M. A. KUPFER, L. A. POTASHNIK, N. N. PRIOROV, A. G. SATAROV, I. M. VEDENEYEV, S. B. BREN, AND V. A. NAZAROV, AND "THE DEVELOPMENT OF TURBOFAN JET ENGINES NK-8 AND NK-8-4, AND THE DEVELOPMENT AND REDUCTION TO SERIAL PRODUCTION A SYSTEM OF TECHNOLOGICAL PROCESSES WHICH ASSURED WIDE USES FOR TITANIUM ALLOYS", BY N. D. KUZNETSOV, M. T. VASILISHIN, V. A. KURGANOV, P. M. MARKIN, V. D. RADCHENKO, P. A. SUKHOV, A. A. MUKHIN, V. G. SHITOV, G. I. MUSHENKO, L. A. SHKODO, AND G. P. DOLGOLENKO, HAVE BEEN SUBMITTED BY THE MINISTRY OF THE AVIATION INDUSTRY.

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Reel/Frame

19870555

4

Acc. Nr.: AN0104123

"A SERIES OF INVESTIGATIONS INTO THE DYNAMICS OF A BODY WITH FLUID-FILLED CAVITIES", /65-68/, BY N. N. MOISEYEV, A. A. PETROV, V. V. RUMYANTSEV AND F. L. CHERNOUSKO AND "ULTRA HIGH PRECISION JIG BORING MILLS WITH 1,000 X 1,600 AND 1,400 X 2,240 MM PLATENS", BY A. I. KIRYANOV, V. G. ABRAMOVICH, I. V. GUTKIN, A. S. ALIMPIYEV, G. B. PAUKOV, AND A. S. YEGUDKIN, HAVE BEEN SUBMITTED BY THE COMPUTATION CENTER OF THE ACADEMY OF SCIENCES AND THE MINISTRY OF THE MACHINE TOOL CONSTRUCTION AND TOOL INDUSTRY, RESPECTIVELY.

"THE RADICALLY IMPROVED MELTING TECHNOLOGY OF CRITICAL-PURPOSE HIGH-ALLOY STEELS AND ALLOYS OF IMPROVED QUALITY ACHIEVED BY THE INERT GAS TREATMENT OUTSIDE THE FURNACE", BY YU. V. GERASIMOV, O. M. CHEKHOMOV, N. V. SIDOROV, S. K. FILATOV, B. A. CHEREMNYKH, R. M. KHAYRUTDINOV, I. P. BARMOTIN, L. K. KOSYREV, K. P. BAKANOV, N. N. VLASOV, P. I. MELIKHOV, AND N. A. TULIN, HAS BEEN SUBMITTED BY THE ZLATOUST METALLURGICAL PLANT,

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Reel/Frame

19870556

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1/2 037 UNCLASSIFIED PROCESSING DATE--16OCT70
TITLE--APPROXIMATION OF THE TRANSMISSION COEFFICIENT BY MEANS OF
COMBINATIONS OF EXPONENTIAL FUNCTIONS -U-
AUTHOR-(02)-DMITRIYEV, A.A., ABAKUMOVA, G.M.
COUNTRY OF INFO--USSR
SOURCE--IZV. AKAD. NAUK SSSR, FIZ. ATMOS. OKEANA 1970, 6(1), 102-3
DATE PUBLISHED-----70
SUBJECT AREAS--ATMOSPHERIC SCIENCES, NAVIGATION
TOPIC TAGS--IR RADIATION, SPECTRAL ABSORPTIVITY, FUNCTION, ATMOSPHERE,
WATER, ATMOSPHERIC WATER VAPOR
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--1991/0749 STEP NO--UR/0362/70/006/001/0102/0103
CIRC ACCESSION NO--AP0110473
UNCLASSIFIED

2/2 037

UNCLASSIFIED

PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AP0110473

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE INTERDEPENDENCE OF THE TRANSMITTANCE τ OF THE EARTH'S ATM. ON THE MASS OF THE ABSORBING SUBSTANCE χ IN THE PATH OF THE LIGHT BEAM MAY BE EXPRESSED BY THE ORTHOGONAL SERIES OF THE EXPONENTIAL FUNCTIONS IN FORM: (EQUATION SHOWN ON MICROFICH). THE METHOD OF CALC. OF THE COEFFS. C_{SUBKM} AND α_{SUBK} ARE GIVEN. THE METHOD IS EXEMPLIFIED ON THE SPECTRAL ABSORPTION OF THE IR RADIATION BY H_2O IN THE $6.3\text{-}\mu$ BAND. THE MEAN SQUARE DEVIATION IS 0.009 AND 0.007 FOR χ SMALLER THAN X SMALLER THAN 1 AND χ SMALLER THAN X SMALLER THAN 25, RESP. FACILITY: MOSK. GOS. UNIV., MOSCOW, USSR.

UNCLASSIFIED

USSR

DMITRIYEV, A. F.

"The Effect of Physical Pressures on Intellectual Work Capacity of Plant-Technical College Students"

Moscow, Teoriya i Praktika Fizicheskoy Kul'tury, No 6, Jun 71, pp 59-62

Abstract: The facility used was in the city of Penza where students are working in production for one semester while also taking physical education courses; students take college courses for one semester, away from the plant, while continuing to take physical education and engaging in sports; and evening class students do not take physical education or engage in sports (the control group). The task was to determine the effect of physical demands on intellectual capacity before and after the first and second semesters, at the physical education course (basketball), and away from any sports activities. The effect was measured by giving the students a five minute test on addition and subtraction before and after hard physical effort. Results showed that physical exertions have a positive effect on intellectual activity and academic success. The recommendation is for some physical program and/or education to supplement day and evening academic programs, and industrial
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USSR

DMITRIYEV, A. F., Teoriya Praktika Fizicheskoy Kul'tury, No 6, Jun 71,
pp 59-62

field work programs. The author suggests, however, that a fuller exploration of the whole problem must take place; more precise research techniques on more precise research objectives is called for.

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USSR

UDC 621.382.2

DMITRIYEV, A. G., HASLEDORF, D. N., TSARENKOV, B. V.

"Inverse Branch of the I-U-Characteristic and Breakdown of the p-n-Structures in the Presence of Incomplete Ionization of the Impurity Centers (in the Example of GaAs p-n-Structures Alloyed with Si)"

Leningrad, Fizika i Tekhnika Poluprovodnikov, Vol 6, No 2, 1972, pp 345-352

Abstract: Results are presented from a study of the inverse branch of the I-U-characteristic and electric breakdown of GaAs p-n-structures, the n-region of which is alloyed with fine donors (tellurium and silicon), and the p-region contains deep acceptor centers caused by introduction of Si atoms. The measurements were performed in the temperature range of 77-350° K. From analyzing the dependence of the photocurrent multiplication factor on the voltage and the dependence of the current on the voltage it was established that for all temperatures in the 77-350° K range the mechanism of electric breakdown of the p-n-junction is impact ionization.

The I-U-characteristic of the p-n-structure at voltages of $U > U_B$ (U_B is the breakdown voltage of the p-n-junction) has a different form for different temperature intervals: for temperatures near room temperature when a significant part of the acceptor centers of silicon in the p-region are ionized, 1/2

USSR

DMITRIYEV, A. G., et al., Fizika i Tekhnika Poluprovodnikov, Vol 6, No 2, 1972, pp 345-352

the I-U-characteristic is linear ($I = U - U_B / R_s$ where R_s is the residual resistance of the p-n-structure) and at temperatures close to the temperature of liquid nitrogen when a significant part of the acceptor centers of the silicon are not ionized, the I-U-characteristic is exponential ($I \sim \exp \chi(U - U_B)^{1/2}$ where χ is the parameter of the p-n-structure).

The exponential dependence of the current on voltage after breakdown of the p-n-junction was caused by an increase in the hole concentration in the p-region as a result of ionization of the acceptor centers of the silicon with an increase in intensity of the electric field in the p-region of the p-n-structure (thermofield ionization of the impurity atoms -- the Frenkel effect).

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UDC 621.382.2

DMITRIYEV, A. G. and TSARENKOV, B. V.

"Electroluminescence Kinetics in Light Diodes"

Leningrad, Fizika i tekhnika poluprovodnikov, vol. 5, No. 8, 1971, pp 1494-1502

Abstract: In the development of the new branch of semiconductor electronics known as optical electronics, one of the chief problems is increasing the reaction speed of the p-n junction devices, known as light diodes, which emit visible light. The purpose of the research described in this article is to consider the effect of the barrier capacitance of the p-n junction and the switching modes of the current through the diode on the latter's electroluminescence kinetics. Also considered is the relationship between the radiation intensity, the flux of injected electrons, and the time. It is assumed that the electron lifetime in the p region, caused by both radiation and radiationless recombinations, is independent of their concentration. Experiments performed with GaAs diodes in which the p region was alloyed with silicon verified expressions obtained for the relative increase and drop in

1/2

USSR

DMITRIYEV, A. G., and TSARENKOV, B. V., Fizika i tekhnika poluprovodnikov, Vol 5, No 8, 1971, pp 1494-1502

radiation intensity. The authors express their gratitude to D. N. Nasledov for his interest, to G. V. Tsarenkov for his comments, and to O. V. Konstantinov and V. I. Perel'. They are associated with the A. F. Ioffe Physico-Technical Institute of Leningrad.

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USSR

UDC 619:614.9-07:637.547.1

DMITRIYEV, A. I., Leningrad Veterinary Institute

"The Effect of Chlorophos on the Quality of Poultry Products"

Moscow, Veterinariya, No 8, Aug 70, pp 104-106

Abstract: Chlorophos solutions are used for control of ectoparasites in poultry. Since the compound is dangerous to man and, even though applied externally, penetrates the skin of chickens, a study was performed to determine the presence of chlorophos residues in poultry products. The tests were performed on chickens raised commercially and under laboratory conditions. In each treatment, 40-50 ml of a commercial 0.5% aqueous solution of chlorophos was applied per chicken. Control animals were sprayed with an equal amount of water. Chlorophos residues were found in the feathers for up to 180 days after treatment; however, the first washing of the feathers with an alkaline detergent destroyed all of the residue. Blood choline-esterase was inhibited by up to 33% for 24 hours after the treatment; after 7 days, its activity returned to normal. Eggs laid during the 1st day after treatment contained a permissible amount of chlorophos residue and were fit for human consumption. On the basis of chlorophos residues found in the meat, it was considered safe to slaughter the chickens, 7 days after treatment when the animals were raised under commercial conditions, and 30 days after treatment when

1/2

USSR

DMITRIYEV, A. I., Veterinariya, No 8, Aug 70, pp 104-106

the animals were raised in special accommodations. Maintenance of the carcasses for 6 months at a temperature of -10°C did not destroy the chlorophos residues. The residues were destroyed, however, by cooking the carcasses in open containers for 3 hours.

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USSR

UDC: 539.1.074

DMITRIYEV, A. K., KON'KOV, N. G., KRYLOV, S. Yu.

"Adiabatic Differential Calorimeter for Measurement of Absorbed Dose of Powerful Beams of Accelerated Electrons"

Dozimetriya i Radiats. Protsessy v Dozimetr. Sistemakh [Dosimetry and Radiation Processes in Dosimetric Systems -- Collection of Works], Tashkent, Fan Press, 1972, pp 59-62 (Translated from Referativnyy Zhurnal Metrologiya i Izmeritel'naya Tekhnika, No 3, 1973, Abstract No 3.32.1388), from the resume.

Translation: The design of a calorimeter intended for measurement of local absorbed doses in tissue-equivalent media produced by a beam of accelerated electrons at 1-10 MeV energy is described. The method of measurement of the absorbed dose is reduced to comparison of temperature changes in the absorber under the influence of the radiation to temperature changes caused in a control calorimeter by Joule heat. The calorimeter is suggested for use in calibration of film dosimeters in the 10-100 krad/s dose range. The calculated error in measurement of absorbed doses is 1%. 1 figure, 3 biblio. refs.

1/1

USSR

UDC 517.925.3

YEGUPOV, N. D., DMITRIYEV, A. N., Moscow Higher Technical Academy imeni Bauman

"An Approximation Method of Integrating Differential Equations With Polynomial Coefficients"

Minsk, Differentsial'nyye Uravneniya, Vol 9, No 4, Apr 73, pp 609-613

Abstract: An approximation method is proposed for solving ordinary linear differential equations of the form

$$\sum_{v=0}^n a_v(t) x^{(v)} = y(t),$$

satisfying the following conditions: a) $x(0) = x_0, x'(0) = x_1, \dots, x^{(n-1)}(0) = x_{n-1}$; b) $\{a_i(t)\}$ ($i = 0, 1, \dots, n$) are continuous functions $t \in [0, \infty)$; c) $y(t)$ is the original of an integral Laplace transform; d) t is a real variable. The solution $x(t) \in L_2[0, \infty)$ is found in the form of an expansion in an orthogonal series. The proposed method is analytical but, at the same time, is readily programmable for digital computers. A numerical example is given.
1/1

DMITRIYEV, A. N.

Oceanography

UNDERWATER COMMUNICATIONS AND TOWED EQUIPMENT

Selected translations from the Russian-language periodical
Soyuzmornichivodnik, No 29, 1972, DONSAP Publishing House, Moscow,
signed to press 19 January, 1972, pp 26-40, 40-47.

JPRS 57115
27 September 1972

D-3

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Underwater ~~Acoustic~~ Communication Between Aquanauts

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Underwater Attached and Towed Apparatus

(A. N. DMITRIYEV)..... 13

oceanography

DMITRIYEV, A. N.
K. G. LOFFO, I. G.
RAYMOND, R. S.

- a -

[I - USSR - F]

USSR

UDC: 621.372

DMITRIYEV, A. N., YEGUPOV, N. D.

"Problems of Analyzing Linear Systems Which Have Random Parameters"

Tr. nauchn.-tekhn. konferentsiy. Kaluzh. obl. sovet nauch.-tekhn. o-v (Works of Scientific and Technical Conferences. Kaluga Regional Council of Scientific and Technical Societies), Kaluga, 1970, pp 105-107 (from RZh-Radio-tehnika, No 6, Jun 71, Abstract No 6A103)

Translation: The authors investigate the statistical properties of elements of the generalized spectral characteristic of a closed linear system with random parameters. Bibliography of one title. N. S.

1/1

1/2 040 UNCLASSIFIED PROCESSING DATE--09OCT70
TITLE--THE DESIGN OF THE CONTROL SYSTEM SPACECRAFT STABILISATION WITH
HUMAN OPERATOR -U-
AUTHOR-(05)-SOLODOVNIKOV, V.V., DMITRIEV, A.N., SEMENOV, V.V., ARUTUNOV,
S.K., LOBISOV, E.S.
COUNTRY OF INFO--USSR, FRANCE

SOURCE--INTERNATIONAL FEDERATION OF AUTOMATIC CONTROL, SYMPOSIUM ON
AUTOMATIC CONTROL, 3RD, TOULOUSE, FRANCE, MAR 2-6, 1970, PAPER, 18
DATE PUBLISHED---MAR70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES, SPACE TECHNOLOGY

TOPIC TAGS--MAN, MAN MACHINE SYSTEM, MANUAL, SPACECRAFT RENDEZVOUS, ORBIT
CORRECTION, SPACECRAFT LANDING

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1996/0006

STEP NO--FR/0000/70/000/000/0018/0018

CIRC ACCESSION NO--AT0117306

UNCLASSIFIED

2/2 040

UNCLASSIFIED

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ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. CONSIDERATION OF THE ACTIVE ROLE OF MAN IN SOLVING NUMEROUS SPACE PROBLEMS SUCH AS RENDEZVOUS, MIDCOURSE CORRECTION, LANDING, ETC. ALL THESE OPERATIONS INCLUDE MANUAL SPACECRAFT STABILIZATION. BECAUSE OF THEIR GREAT IMPORTANCE, ANALYTICAL DESIGN IS NECESSARY. ATTENTION IS GIVEN TO THE DYNAMIC AND INFORMATION RESEARCH OF HUMAN OPERATOR FEATURES. THE MAJOR REASON FOR MANUAL TRACKING IS THE NECESSITY FOR CONSTANCY OF INFORMATION TRANSMISSION RATE. THE CORRELATION BETWEEN RANDOM DELAY TIME AND INPUT PROVIDED AN OPPORTUNITY TO OBTAIN A STOCHASTIC DYNAMIC MODEL OF THE OPERATOR.

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UDC 612.821.6

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"Formation of Subjective Time Estimation in Man"

Moscow, Zhurnal Vysshey Nervnoy Deyatel'nosti imeni I. P. Pavlov, Vol 23,
Vyp 4, Jul/Aug 73, pp 704-710

Abstract: Subjective time estimation was studied in 20 8-to-9-year-old children, 21 11-to-13 year-olds and 21 15-to-16 year-olds, using the verbal estimation of 45-, 60- and 100-second intervals and operative estimation (measuring) of a 60-second interval. Half of each group was trained to correctly estimate a 60-second interval using light signals, and then given a series of false information as to the correctness of their estimate. Counting was used as an aid. After similar training, the second half was given false information as to the correctness of their counting tempo. Accuracy of estimation was found to increase with age. Except for some of the youngest, the children spontaneously used counting as an aid. Training, while quickly effective for the older subjects, did not increase the accuracy of most of the younger ones. However this training was quickly undone by false information, except for the 8-to-9-year-olds. The rate of counting
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DMITRIYEV, A. S. and VOITYUKOVA, Z. V., Zhurnal Vysshey Nervnoy Deyatel'nosti imeni I. P. Pavlov, Vol 23, Vyp 4, Jul/Aug 73, pp 704-710

was lowered by the false information in both groups, and almost always lead to a subsequent underestimation of the intervals. These results are said to confirm that subjective time estimation is a generalized reflection of time in a second signal system, usually, but not always, a mental count, based on a conditioned reflex to time.

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UDC 636.612

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"Characteristic Features of the Effect of Hypergravity on the Motor Activity of the Amnion of a Chicken Embryo Developed Under Ordinary Conditions and Conditions of Constant Rotation"

Minsk, Doklady Akademii nauk BSSR, 1972, Vol 16, No 10, pp 962-965

Abstract: Special studies were made of the characteristic features of the reactivity and adaptation to rotation of developing chick embryos in the first half of the incubation period when, as is known [Z. Y. Kuo, J. Exp. Zool., No 61, 395, 1932], their motor activity arises from periodic contractions of the amnion (from the fourth to the 13th day of incubation). The indexes of reactivity to rotation of the embryos and their adaptation to the acceleration effects caused by rotation were the variations in integral characteristic of the amplitude and frequency of the contractions of the amniotic sac and their time parameters in embryos not subjected to constant rotation and subjected to rotation from the first day of incubation. The data presented indicate that the nature of the variations in reactivity of the amnion to rotation strictly depends on the incubation period. The motor activity of 5-7-day-old embryos is inhibited under the effect of rotation, and it is intensified for 8-12-day-1/2

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DMITRIYEV, A. S., Doklady Akademii nauk BSSR, 1972, Vol 16, No 10, pp 962-965

old embryos. During rotation adaptation this nature of variation in reactivity of the amnion to the rotation does not change. However, the expression of the shifts in periodic contractions of the amniotic sac caused by rotation depends directly on the incubation period and the training time. In the 5 to 7 day old embryos adapted to rotation, the accelerations caused less expressed shifts in the motor activity of the amnion than in the unadapted ones of the same age. A still greater increase in resistance to the effects was observed in the embryos in the later periods of development (8-11 days) and subjected for a longer period of time to the rotational adaptation. Depending on the stage of development, the latent period and the duration of the investigated motor reaction of the embryos not adapted to rotation gradually increased from 47 (fifth day) to 57 seconds (11th day) and from 64 to 75 seconds (fifth to 11th days) respectively.

Embryos developed in the first day of incubation in a constantly rotating centrifuge exhibited a latent period of the motor reaction of the amniotic sac to the acceleration effect which was greater than in embryos not adapted to rotation. The latent periods gradually increased (from 57 to 69 seconds), and the reaction time became shorter (from 62 to 39 seconds). Thus, the embryo has the capacity for adaptive reactions to hypergravitation from the earliest period.

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Combustion

USSR

UDC 541:124-137

LOGACHEV, V. S., DMITRIYEV, A. S., and POKHIL, P. F., Institute for Physical Chemistry, Academy of Sciences, USSR, Moscow

"Combustion Mechanism for Ammonium Perchlorate"

Moscow, Doklady Akademii Nauk SSSR, Vol 205, No 2, 1972, pp 400-403

Abstract: The mechanism is examined for the generation of the ionization zone during the combustion of ammonium perchlorate (APC) and equations derived quantitatively relating the kinetics with events occurring in the condensed phase and gas phase during the decomposition. The monomolecular reaction rate follows the equation

$$u n_1 = \int_0^{\infty} n_0 Z_1 \exp(-E_1/kT) dx$$

where u is the rate of combustion; n_0 and n_1 are the number of APC molecules and the number of defects per cm^3 , E is the activation energy, and Z_1 is the

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LOGACHEV, V. S., et al., Doklady Akademii Nauk SSSR, Vol 205, No 2, 1972, pp 400-403

preexponential factor. Combining this equation with a similar one for bimolecular reactions, and expressing E_1 (and the corresponding E_2) and n_1 in terms of the physical constants of the system and experimental conditions, an equation is obtained which expresses u entirely in terms of physical and thermodynamic variables. From this equation it can be seen that the governing factors are the physical and chemical processes occurring in the condensed phase of the crystal.

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UDC 662.222

LOGACHEV, V. S., DMITRIYEV, A. S., and POKHIL, P. F. (Moscow)

"On the Mechanism of Ammonium Perchlorate Combustion"

Novosibirsk, Fizika Goreniya i Vzryva, Vol 8, No 2, Jun 72, pp 236-247

Abstract: The article attempts to elucidate the mechanism for the appearance of an ionization zone in the combustion of ammonium perchlorate, as well as to establish quantitative relations between kinetic regularities taking place in the condensed and gaseous phase during the decomposition (combustion) of inorganic oxidizers. For this purpose measurements were taken of the electric conductivity of the condensed phase during the combustion of ammonium perchlorate. Experiments were staged in a nitrogen atmosphere in the pressure range of 200 mm Hg -- 100 atm. The charges were made of two square-shaped tablets, between which were tungsten-rhenium wire probes. The potential difference fed to the probes varied from 0 to 50 v according to the conditions of the experiment. At the same time the flame temperature was measured by a thermocouple at the site of the probes, with the probes themselves being used as thermocouples at the same time in individual experiments, while the combustion rate could be judged from pressure variations in the bomb.

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The following three important results were noted in the experiments:

1. The activation energy of ammonium perchlorate decomposition grows as the temperature in the heating-up zone (Michelson layer) of the ammonium perchlorate grows.
2. A potential difference appears in the reaction zone.
3. The gas directly next to the burning surface of ammonium perchlorate is in the plasma state.

The following combustion mechanism is possible:

1. In the heating-up zone of the condensed phase, negative and positive ion defects are formed, resulting in a space charge with high conductivity in the reaction layer of ammonium perchlorate.

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2. Since exchange reactions are hindered in the surface layer, ion association takes place with the formation of ion pairs, since this is more advantageous from the energy standpoint.

3. As the associates reach the surface, the ammonium perchlorate crystals dissociate, forming radicals of the $\text{ClO}_4^\cdot$, $\text{NH}_4^\cdot$ or HCl_4 , NH_3 type and ionization zones in the gaseous phase (of the chemical plasma, where $e^2/r = kT$).

The combustion rate of ammonium perchlorate is determined by the physicochemical processes taking place in the condensed phase of the crystal.

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UDC 612.833.9+612.838.81

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"Physiological Mechanisms Controlling the Adaptation of Man to Time Intervals"

Moscow, Zhurnal Vysshey Nervnoy Deyatel'nosti, No 2, 1970, pp 293-302

Abstract: Human awareness of and reactions to time intervals are based on the physiological mechanisms involved in the formation of conditioned reflexes. This review of the literature and some of the author's experiments shows that man is characterized by two different levels of adaptation to time - the first signaling system (perception of external stimuli through the sense organs) and the second signaling system (speech and thought). Both man and animals acquire reflexes to moments of time and to 24-hour environmental influences, and these reflexes are important factors in establishing circadian rhythms of physiological functions. The formation of conditioned reflexes to very short and short intervals of time is based on different and more complex physiological mechanisms, 1/2

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DMITRIYEV, A. S., et al., Moscow, Zhurnal Vysshey Nervnoy Deyatel'-nosti, No 2, 1970, pp 293-302

directly related to the level of phylogenetic development. The second signaling system plays a major role in the formation of motor conditioned reflexes in man, because of the close connection between motor activity and language. The rate of formation of such reflexes is a function of the maturity of the second signaling system.

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